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VINITI'S ROLE IN PROVIDING INFORMATION FOR ENGINEERS AND SCIENTISTS

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The scientific and technical progress taking place in this country permeates the entire field of production: scientific endeavour as well as hundreds of thousands of technical innovations, new mechanisms, instruments, in short, all that saves and lightens human labour and makes it more productive and interesting. At a time when the role of science as an immediate productive force keeps growing, separate scientific achievements, no matter how brilliant, are no longer central; what is central is a high scientific and technical level of production as a whole. The scientific and technical revolution and the accelerated rate of scientific and technical progress it has touched off have made much more acute the problem of supplying scientists, practitioners and all those engaged in science and production with the scientific and technical information they need. The effectiveness of science proper is also closely connected with the social mechanism of scientific communication by which we mean the totality of processes of representation, transfer and receipt of scientific information. The participation of scientists and practitioners is essential to all these processes. However, the growing complexity of scientific work and the need to increase its effectiveness have led to the emergence and institutionalization of scientific information activities and to the establishment of the national information system in this country.

Information support of science and production can only be

effective if it takes into account the real information needs of the user group served by a given information agency. We can distinguish three principal information user groups--researcher engineers and executives of different ranks--by the part they play in the "science-technology-production" cycle and by special features of their information requirements.

The main preoccupation of the research scientist it to cognize the unknown, to reveal, in the hitherto undiscovered fields, meaningful links in a seeming chaos of facts, and to explore new objects, processes and their properties in nature and society. If the scientist knew exactly what data he lacks to cope with his task he would be fairly close to solving it. Therefore, the scientist prefers, as a rule, to scan or read the relevant documents himself, leaving to the information service largely the selection of scientific documents potentially relevant to his subject. Hence, the main forms of information service provided to researchers are, and will long continue to be, the alert information bulletins and abstract journals as well as selective dissemination of information and retrospective searching.

Unlike the researcher, the engineer, who is closer to production in the "science-technology-production" cycle, knows more or less exactly what data he needs to fulfil his task. He can state his information need clearly and expects of the information service as clear a response. The engineer does not want to spend his time on searching for data in scientific documents; he willingly leaves this to the information service. To sum up, the engineer needs data rather than documents which

are preferred by the scientist.

A special user category is formed by the executives of different ranks, including engineers who take part in decision making. The executive generally has to take decisions under the conditions of an acute shortage of information and the time to process it. Therefore, his decisions will be volitional to a greater or lesser extent. The higher the level of management, the greater the deficit of information and time, and the more creative the nature of this management. It should ba pointed out that by 'deficit of information' is meant a relative rather than absolute lack of information. An executive may be literally flooded with varied information, but to make an organisational decision he needs prognostic information, since it is only the analysis of the development trends of a phenomenon that can serve as a basis for correct and timely decision making. So, management information should meet the following criteria: high degree of analysis and synthesis; the lowest possible volume without sacrificing comleteness("core" information); reliability and authenticity; prognostic nature; presentation at a proper time and in a suitable shape for each level of management.

The various services aimed at meeting the information need of the above user categories can be classified as follows : information publications and selective dissemination of information, current awareness information and retrospective retrieval alert information and provision of document copies.

Modern methods and forms of information service to science engineering and production can be illustrated by the two deca-

des of experience gained by VINITI, the world's biggest information centre which acts as the head institution in the development of the USSR's State Scientific and Technical Information system. An Institute of scientific information was set up within the USSR Academy of Sciences by the decision of the USSR Council of Ministers of 19 July 1952, which was transformed in 1955 into what is now the All-Union Institute of Scientific and Technical Information, subordinated to the USSR Academy of Sciences and the State Committee of the USSR Council of Ministers for Science and Technology.

As the Soviet national system of scientific and technical information expanded, the functions of VINITI became more complex and varied. At present, VINITI issues a series of information publications covering the world's scientific and technical literature, provides a reference information service in response to non-recurring and standing requests, conducts basic and applied research in scientific and technical information, acts as the head institution in the State Scientific-Technical Information System, trains scientific personnel for work in the scientific-information field, and maintains international relations in its field.

VINITI carries out centralized processing of the world's published literature in all fields of science and technology, except for clinical medicine, organisation of agriculture, architecture and construction. Annually, a total of 35,500 primary document titles in 66 laguages from 131 countries undergo analytico-synthetic processing at VINITI.

Some 25,000 scientists and practitioners including 140 Academicians and Corresponding Members of the USSR Academy of Sciences, over 1,100 Doctors of Science and more than 6,300 Candidates of Science are engaged on a part-time basis in processing this literature. VINITI's information publications include the Referativnyi Zhurnal (Abstract Journal) with a system of indexes, Alert Information bulletins and survey-type publications.

The main publication is the sectoral Abstract Journal; it is put out as 173 separate series which are brought together in 25 cumulative volumes. In 1974 the Abstract Journal carried some 1.2 million abstracts. VINITI's Abstract Journal leads the world in the coverage of the world's scientific and technical literature and in the speed of bringing it within the reach of the user. Each Abstract Journal series has an author and a subject index in its annual volume and some have them in their individual issues as well. Some of the Abstract Journal series are also furnished with special indexes, such as formula, patent, geographical and so on.

VINITI's Alert Information bulletins is an information service intended for promptly alerting scientists in a field of science or technology to all the publications that may have relevance to their needs. This service supplies bibliographic descriptions in the original language complete with the Russian translations of the titles. In 1975, VINITI issues 73 series of Alert Information bulletins on automation and radioelectronics, chemistry, physics, biology and welding. Users can place orders with VINITI for copies of any primary publication covered by the Alert Information.

VINITI's Itogi Nauki i Tekhniki (Advances of Science and

Technology) is a survey-type publication on the natural and engineering sciences. The 70 regularly appearing series summarize and order data on the achievements, main lines of advance, and trends in science and technology based on the material covered by the Abstract Journal during the past 2 to 3 years.

Of other types of information service provided by VINITI we can name: the selective dissemination of information service covering the whole subject scope of VINITI's work and serving 450 users — Academicians and Corresponding Members of the USSR Academy of Sciences, — and an SDI service in informatics for 250 leading figures in this country's scientific and technical information: information retrieval systems for fluorine organic and inorganic chemistry (the Ftor IR system); manuscript depositing of completed work in the natural, exact and engineering sciences; providing copies of articles in the primary documents covered by VINITI's publications.

The service to the governing and planning bodies which is highly ranked by the Institute deserves special mention. During the last two years VINITI has developed a system of analytical-survey information designed in conformity with this country's planning principles: annual, five-year, and long-term. This service incorporates three kinds of analytical survey: "Annual reports on major developments in science, engineering, and industry" which are meant to be used in drawing up annual plans long-term surveys for preparing five-year plans, and prognostic surveys for long-term planning. Each of these types, in line with the tasks it is designed for, uses a different subfile of the documents received by VINITI over a different

time period, depends on different methodological guidelines, uses a different degree of primary literature analysis and synthesis, suggests alternative solutions together with indications of the predictable consequences of adopting each alternative, and identifies the development trend of the given field or problem area. The writing of the surveys is entrusted to highly competent specialists who can analyze critically and in full awareness of their responsibility the comprehensive material selected for them, without missing any particulars which may play a significant role.

Recognizing the major importance of a properly supplied and timely managerial information in decision making, in scientific, engineering and production planning, VINITI is continuously improving the system of analytical-survey activities by extending the range of its analytical surveys, and their user categories. While in 1972-73 VINITI confined itself to "Annual reports on major developments in science, engineering and production", in 1974 long-term and prognostic analytical surveys were added to the survey system, and in 1975 VINITI will initiate, in addition to the existing surveys, selective bibliography and "Advances in science and engineering" intended for scientific management personnel. While in 1972-73 the Institute rendered service to the "science/engineering/industry managerial staff in the supreme governing and planning bodies, in 1975 to these were added the chiefs of the major ministries and departments. All in all, in 1975 VINITI will have prepared and circulated to more than 100 subscribers 225 analytical surveys on major achievements in science, engineering and

production.

Expanding its recommendatory information system to take account of the needs of researchers and engineers as well as managers, VINITI will shortly begin to mark in its information publications those items which are of particular value for the users: review and prognostic articles containing original scientific solutions, etc.

At present, science and engineering pose increasing numbers of complex problems which require for their solution satisfying ever more personalized needs of seiantists and practitioners stemming both from the special features of their task and their personal characteristics. This means that practically any possible combination of information publication and services must be provided for, i.e. the grouping or "repackaging" of scientific information documents by any combination of attributes. With traditional processes, satisfying the needs of every such group would require each time new processing of the whole immense flow of the world's scientific and technical - literature, with huge spending of skilled labor, time and material resources. No single information agency can tackle this task even partially. It calls for essentially new methods and means, those embodied in integrated information systems which through one-time analytico-synthetic processing of scientific documents ensure their multiple and multi-dimensional uses to meet a variety of information needs.

The integrated information system called ASSISTENT which has been under development at VINITI since 1969 will provide a personalized service for scientists and practitioners using

machine-readable data bases and software packages for document and data retrieval. In the present-day conditions the most effective way of user interaction with the information system is a dialogue which is performed by means of remote display consoles and teletypewriters linked with the computer by telephone and telex lines. Scientific and technological solutions in the ASSISTENT project envisage broad possibilities for use of the system in this dialogue mode.

ASSISTENT will offer the following kinds of reference information service:

- information publications of different types and purposes covering both the scientific and engineering subjects that fall within VINITI's subject scope, and complex and interdisciplinary problems where these have sufficiently large numbers of potential users. The publications will be produced both in the conventional book form and on machine-readable carriers: magnetic tape and 16 mm roll microfilm;

- selective dissemination of information based on the documents covered by the Abstract Journal and the Alert Information bulletins, serving 2000 users who are leading scientists, engineers, and excutives of different ranks;

- retrospective document searches in response to non-recurring requests;

- fact and data retrieval in various fields of science and technology;

-development of special-purpose information retrieval systems;

- presentation of full copies of the scientific documents entered into the ASSISTENT.

The ASSISTENT will serve both its own subscribers, who will addresse it directly, and external users who will have access to its machine-readable data bases of documents subjected to analytico-synthetic processing which will be supplied to scientific-technical information centres througbout the country. Thus, the ASSISTENT will provide its reference-information services to scientists and engineers largely through the network of centres of the State Scientific-Technical Information System, which will receive the ASSISTENT data bases and reference-information collections custom made and ready for use.

Therefore, the implementation of the ASSISTENT integrated information system at VINITI will help to:

- raise substantially the effectivenss of information service of this country's scientists and practitioners and to speed up the industrial application of advances in science;
- develop the State Automated Scientific-Technical Information System;
- make available a computer-based reference information system for science and technology that will be compatible with similar systems abroad, to provide more favourable conditions for the gradual integration of the national information systems of the CMEA countries, and for the development of the World Scientific and Technical Information System, UNISIST.

Проф. А.И.Михайлов. "Роль ВИНИТИ в обеспечении информацией инженеров и научных кадров" /на англ.яз./

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